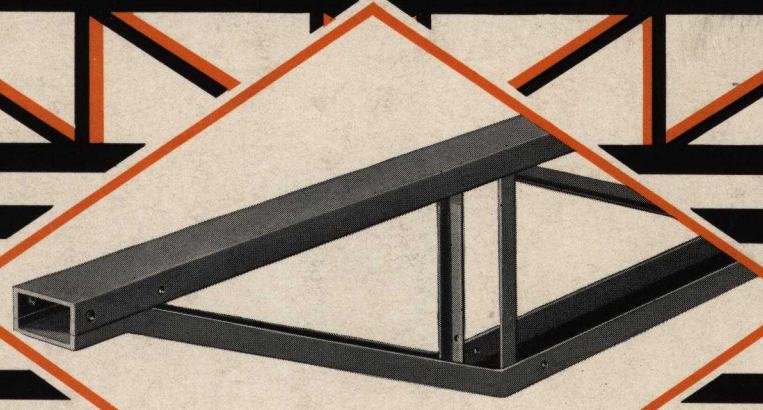
A. I. A. File Number 13i

TRUSCON Clerespan TRUSSES

(TRADE MARK REG. AND PAT. APPLIED FOR)

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO



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TRUSCON Clerespan TRUSSES

(TRADE MARK REG. AND PAT. APPLIED FOR)

for the elimination of columns in building construction

EDITION 1931
No. 657
Superseding No. 654

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO
Sales and Engineering Offices in all Principal Cities
Factories in Cleveland, Detroit, Los Angeles, Walkerville and Japan

3-4-32

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An Innovation

FROM our experience in the manufacture and marketing of the Truscon "O-T" Open Truss Steel Joists, we have observed the preference on the part of architects, engineers and owners for the design of buildings with longer joist spans with the resultant minimizing of structural supports and elimination of numerous supporting columns.

To satisfy this trend, we offer herewith Truscon "Clerespan" Trusses which may be used in a manner exactly paralleling the uses of the Truscon "O-T" Open Truss Steel Joists but on spans greatly in excess of anything heretofore attempted in this type of floor construction.

The Truscon "Clerespan" Trusses have been patterned after the Pratt type of truss in design. The unusually heavy structural steel angles from which they are made permits this to be economically accomplished and all local as well as direct bending stresses in the top chords have been fully taken into consideration in the calculation of their carrying capacities. Automatic high pressure electric welding is employed to give positive connections at all joints.

Truscon "Clerespan" Trusses are in reality box type lattice girders having a double web system thus having the most economical and efficient distribution of metal and resulting in the most rigid type of structural unit.

Where and Why Used

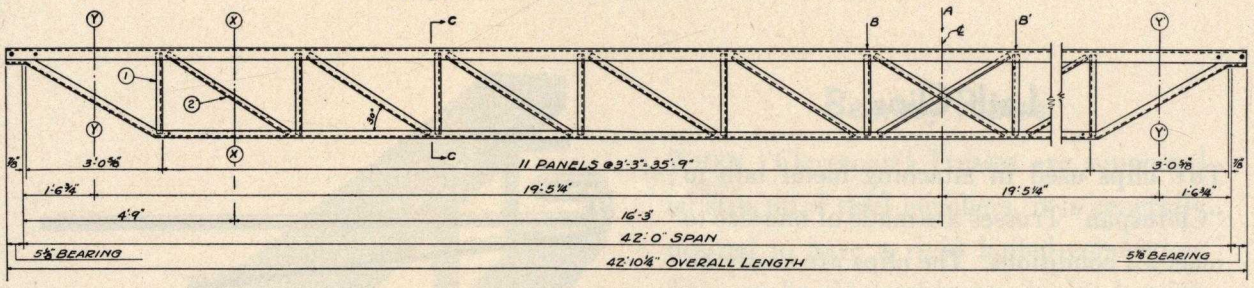
WHERE USED—Truscon "Clerespan" Trusses when used in floor construction can advantageously be used in buildings of all types of occupancies regardless of their location. In many types of buildings their use will automatically eliminate all columns from the structure with the exception of those in the outer walls. Greater floor areas are thus provided without obstructing columns than has ever heretofore been accomplished. When used in roof construction, they meet every requirement of every type of building.

ADVANTAGES—Beyond a doubt, the most outstanding advantage of this type of construction is the elimination of numerous columns from the structure, thus making available larger unobstructed areas in floor space and permitting greater flexibility in the arrangement and design of interior equipment and furnishings or location of partitions. This outstanding feature has a genuine value in itself to the owners.

The large open spaces between the web members easily permit of the passage of pipes and conduits of any number and in any direction. The erection of buildings involving this type of construction can be carried on as readily in the severe winter months as during those of the summer.

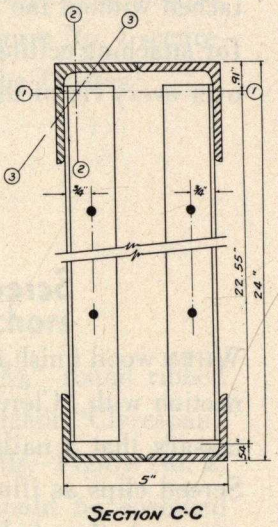
FIREPROOFNESS—Truscon "Clerespan" Truss construction will receive the first class fireproof classification by the majority of insurance rating bureaus the same as the Truscon "O-T" Open Truss Steel Joist construction has already received for a number of years. Fire tests prove that 7/8" of cement or gypsum ceiling plaster will protect the construction against high temperatures. The necessary requirements in any type of building receiving first class fireproof classification being that all supporting structural beams and columns be fireproofed in accordance with the standard provisions of the Underwriters.

Typical Calculations



Clerespan Truss Type 243

Top Chord — 2 angles 3" x2½"x¼" Total Area 2.62 sq. in.
Bottom Chord— 2 angles 2" x2½"x¼" Total Area 2.12 sq. in.
Web System — 2 angles 1½"x1½"x⅛" Total Area 0.72 sq. in.



SECTION C-C

CALCULATION OF ALLOWABLE STRESS IN CHORD MEMBERS:—

The unsupported length of top chord = panel length minus width of welds
= 3'-3" minus 2" = 3'-1" or 37".

The l/r of a top chord angle about axis 1-1 $= \frac{37}{.95} = 39$

The l/r of a top chord angle about axis 2-2 $= \frac{37}{.75} = 49.5$

The l/r of a top chord angle about axis 3-3 $= \frac{37}{.53} = 70$

In order to reduce the l/r values about axes 2-2 and 3-3 the angles forming the top chords of trusses are welded at panel points and at centers of panels which reduces these values by one half making the greatest l/r ratio about axis 1-1. The resulting l/r values are as follows:—

The l/r of top chord about axis 1-1 $= \frac{37}{.95} = 39$

The l/r of top chord about axis 2-2 $= \frac{18.5}{.75} = 24.75$

The l/r of top chord about axis 3-3 $= \frac{18.5}{.53} = 35$

The allowable stress in the top chord will then be determined by the values about axis 1-1.

$$fs = \frac{18000}{1 + \frac{1^2}{18000 \times r^2}} = \frac{18000}{1 + \frac{37^2}{18000 \times .95^2}} = 16600 \text{ \#} / \square''$$ but this is arbitrarily reduced to 15000 # / □" to conform to A. I. S. C. spec.

The allowable stress in the bottom chord will be 18000 # / □".

CALCULATION OF RESISTING MOMENTS OF CHORD MEMBERS:—

The effective depth of Truss = distance between centers of gravity of top and bottom chords
= 24"—(.91" + .54") = 22.55".

R. M. of Top Chord = 2.62 □" x 22.55" x 15000 # / □" = 886,215 inch lbs.
R. M. of Bottom Chord = 2.12 □" x 22.55" x 18000 # / □" = 860,508 inch lbs. = 71,709 ft. lbs.
The R. M. of the bottom chord, being the lesser of the two, will govern in the following calculation.

CALCULATION OF SAFE LOAD BY RESISTING MOMENT:—

$M = \frac{WL}{8}$; $W = \frac{8M}{L} = \frac{8 \times 71709}{42} = 13660$ lbs. total safe load = 325 # / lineal foot.

CALCULATION OF BENDING STRESSES IN TOP CHORD:—

Considering the top chord as a continuous beam, the bending moment at the center of the middle panel (point A) will be $Wl^2/24$ with an allowable combined bending and direct stress of 15000 # / □". The bending moment at the support (point B) will be $Wl^2/12$ with an allowable combined stress of 18000 # / □".

COMBINED STRESS AT POINT A:—

Direct stress in top chord $= \frac{860{,}508}{2.62 \times 22.55} =$ 14600 #/□".

Bending Moment $= \frac{325 \times 3.08^2}{24} \times 12 = 1542$ inch lbs.

Compressive Bending Stress $= \frac{Mc}{I} = \frac{1542 \times .91}{2 \times 1.2} =$ 585 #/□".

15185 #/□" total combined stress.

To meet the A. I. S. C. Spec., this must be reduced to a total combined stress of 15000 #/□".

The allowable combined stress at point A being 15000 #/□", the direct stress will have to be reduced by 15185 minus 15000 or 185 #/□", making the allowable direct stress 14600 #/□" minus 185 #/□" = 14415 #/□".

The allowable resisting moment will correspondingly be reduced:—

14415 #/□" x 2.62 sq. in. x 22.55 in. = 851,652 inch lbs. = 70971 foot lbs.

CALCULATION OF SAFE LOAD BY RESISTING MOMENT DETERMINED BY COMBINED STRESSES:—

$M = \frac{WL}{8}$; $W = \frac{8M}{L} = \frac{8 \times 70971}{42} =$ 13500 lbs. total safe load

= 321 lbs. per lineal foot.

COMBINED STRESSES AT POINT B OR B':—

Direct stress in top chord $= \frac{851{,}652}{2.62 \times 22.55} =$ 14415 #/□".

Bending Moment $= \frac{321 \times 3.08^2 \times 12}{12} = 3050$ inch lbs.

Compressive Bending stress $= \frac{Mc}{I} = \frac{3050 \times 2.09}{2 \times 1.2} =$ 2660 #/□".

17075 #/□" total combined stress.

Allowable Stress by A. I. S. C. Specifications = 18000 #/□".

CALCULATION OF SHEARING STRESSES:—

In checking the stresses in the web members it is necessary to consider members No. 1 and No. 2 only since the angles of the web system are the same size throughout the truss.

STRESS IN MEMBER NO. 1:—

Shear across Sect. Y-Y = 321 #/' x 19'-5¼" = 6240 lbs.

Unit stress in angles Member No. 1 $= \frac{6240}{2 \times .36 \square"} = 8667$ #/□".

l/r of web angles $= \frac{22.55}{.30} = 75$

Allowable stress $= \frac{18000}{1 + \frac{22.55^2}{18000 \times .30^2}} = 13714$ #/□".

Stress in Welds $= \frac{6240}{2} = 3120$ lbs.

The allowable working stress of the welds is 10000 lbs. for each weld or 20000 lbs. for each web member composed of 2 angles.

Unit Stress in bottom chord at Sect. Y-Y $= \frac{6240}{\text{sine } 30° \times 2.12 \square"} = 5900$ #/□".

Allowable Stress by A. I. S. C. Specifications = 18000 #/□".

STRESS IN MEMBER NO. 2:—

Shear across Sect. X-X = 321 x 16'-3" = 5220 lbs.

Unit stress in member 2-2 $= \frac{5220}{\text{sine } 30° \times 2 \times .36} = \frac{5220}{.5 \times 2 \times .36} = 14500$ #/□".

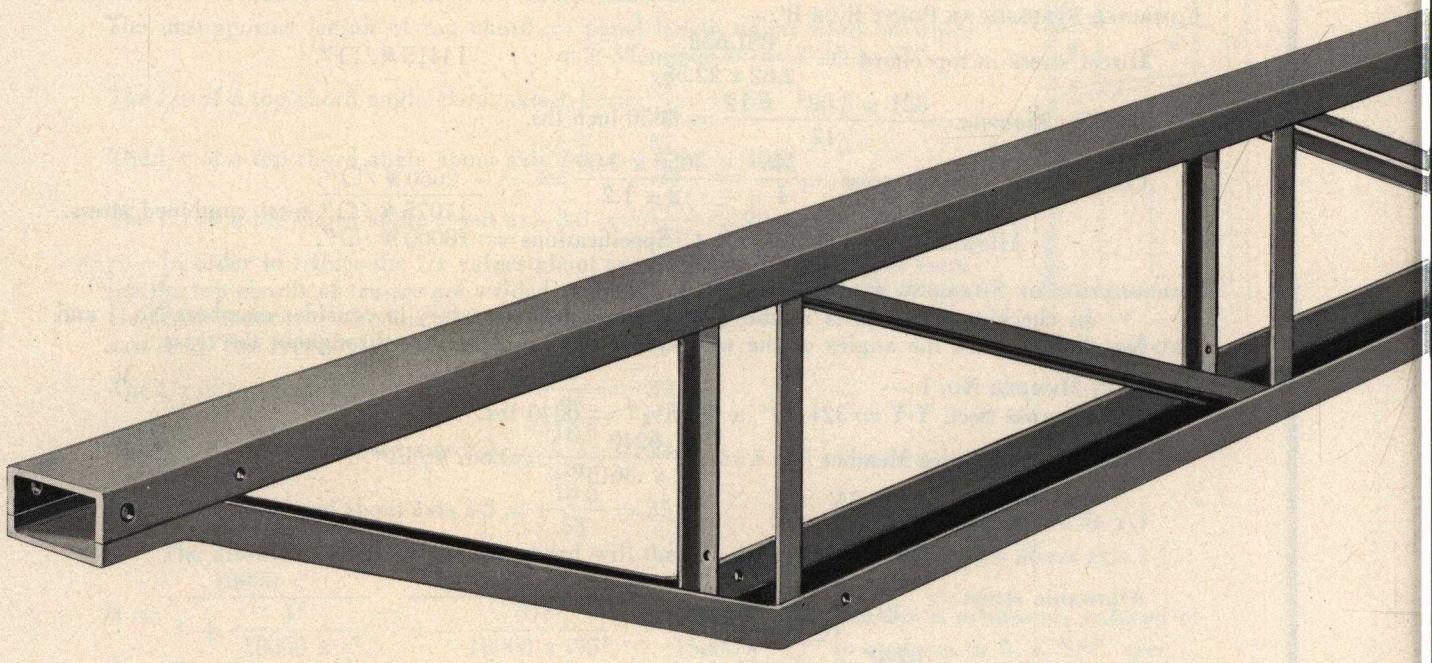
Allowable stress by A. I. S. C. Spec. = 18000 #/□".

Stress in weld $= \frac{5220}{\text{sine } 30° \times 2} = 5220$ lbs.

From the above calculations it is evident that the load carrying capacity of the type 243 "Clerespan" Truss on a 42'-0" span is 13500 lbs. uniformly distributed which is governed by the combined direct and bending stresses in the top chord.

TRUSCON *Clerespan* TRUSSES

(TRADE MARK REG. AND PAT. APPLIED FOR)



Provide greater areas of floor space unobstructed by columns.

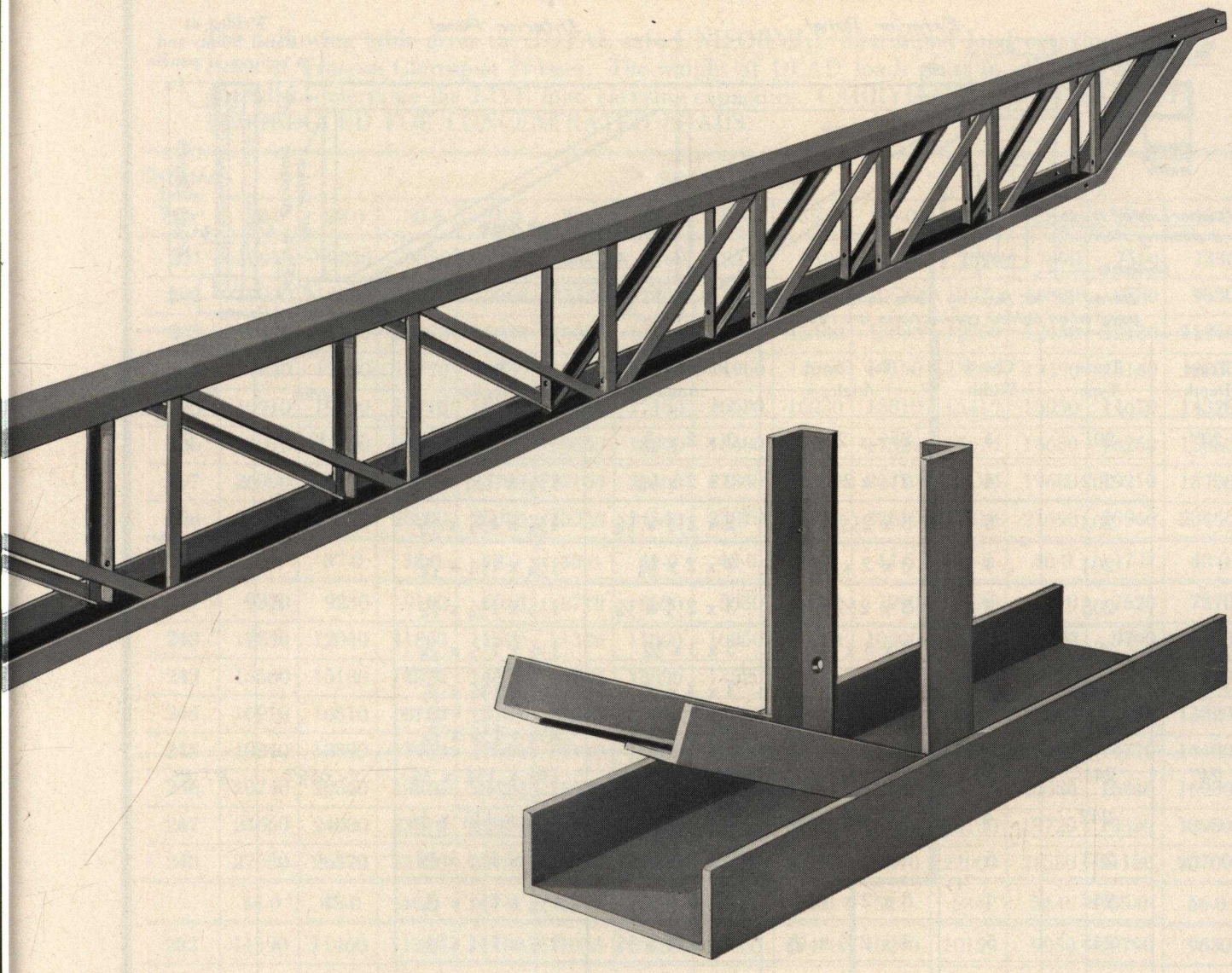
Can be used in floor and roof spans up to 56 feet.

Greater floor areas unobstructed by columns give greater flexibility in arrangement of interior equipment and furnishings.

Securely bridged by means of "Strut" or cross bridging, securely bolted in place.

A fireproof type of construction quickly and easily obtained.

Possessing unusual latteral stiffness.



Designed as a Pratt Type Truss.

All compression stresses reduced to provide for local as well as direct bending.

Automatic electric resistance pressure welding employed in all joints.

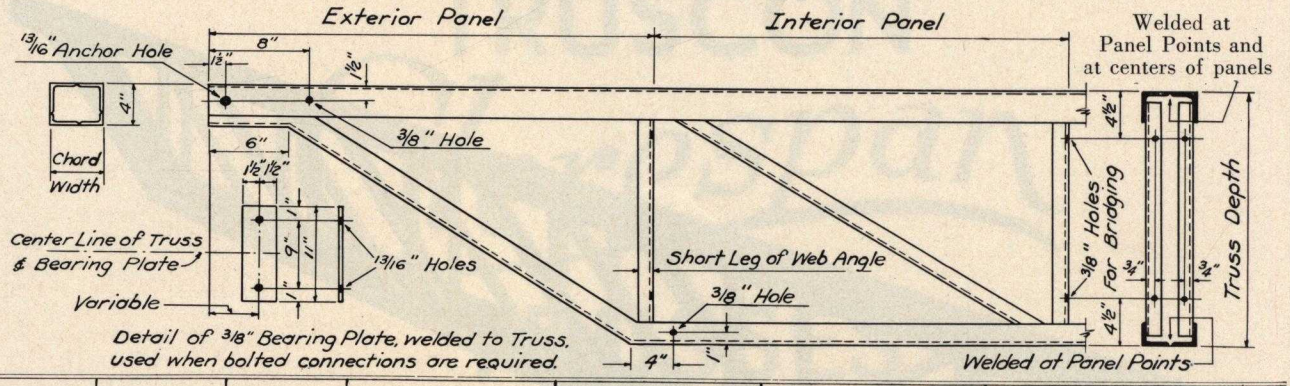
Made entirely of hot rolled structural angles.

In reality a box type lattice girder having a double web system.

The open web system permits of the passage of pipes and conduits.

Being underslung in design, they are easily erected.

Dimensions and Properties



Truss Depth	Truss Type	Chord Width	Top Chord Angles *	Bottom Chord Angles *	Web Angles	PANEL LENGTHS	
						Exterior	Interior
20"	201	4	2½ x 2 x 3/16	2 x 2 x 3/16	1¼ x 1¼ x ⅛	2'-11¾"	2'- 9"
	202	4	2½ x 2 x ¼	2 x 2 x ¼	1¼ x 1¼ x ⅛		
	203	5	3 x 2½ x ¼	2 x 2½ x ¼	1¼ x 1¼ x 3/16		
	204	4	3 x 2 x 5/16	3 x 2 x ¼	1¼ x 1¼ x 3/16		
	205	5	3 x 2½ x 5/16	3 x 2½ x ¼	1½ x 1¼ x 3/16		
	206	6	3 x 3 x 5/16	3 x 3 x ¼	1½ x 1½ x 3/16		
	207	6	3 x 3 x ⅜	3 x 3 x 5/16	1¾ x 1¾ x 3/16		
	208	6	3½ x 3 x ⅜	2½ x 3 x ⅜	2¼ x 1½ x 3/16		
24"	241	4	2½ x 2 x 3/16	2 x 2 x 3/16	1¼ x 1¼ x ⅛	3'- 6⅝"	3'- 3"
	242	4	2½ x 2 x ¼	2 x 2 x ¼	1¼ x 1¼ x ⅛		
	243	5	3 x 2½ x ¼	2 x 2½ x ¼	1½ x 1½ x ⅛		
	244	4	3 x 2 x 5/16	3 x 2 x ¼	1¼ x 1¼ x 3/16		
	245	5	3 x 2½ x 5/16	3 x 2½ x ¼	1¼ x 1¼ x 3/16		
	246	6	3 x 3 x 5/16	3 x 3 x ¼	1½ x 1¼ x 3/16		
	247	6	3 x 3 x ⅜	3 x 3 x 5/16	2 x 1¼ x 3/16		
	248	6	3½ x 3 x ⅜	2½ x 3 x ⅜	1¾ x 1¾ x 3/16		
28"	282	4	2½ x 2 x ¼	2 x 2 x ¼	1¼ x 1¼ x ⅛	4'- 1½"	3'- 9"
	283	5	3 x 2½ x ¼	2 x 2½ x ¼	1½ x 1½ x ⅛		
	284	4	3 x 2 x 5/16	3 x 2 x ¼	1¼ x 1¼ x 3/16		
	285	5	3 x 2½ x 5/16	3 x 2½ x ¼	1¼ x 1¼ x 3/16		
	286	6	3 x 3 x 5/16	3 x 3 x ¼	1½ x 1¼ x 3/16		
	287	6	3 x 3 x ⅜	3 x 3 x 5/16	2 x 1¼ x 3/16		
	288	6	3½ x 3 x ⅜	2½ x 3 x ⅜	1¾ x 1¾ x 3/16		

* Dimension of vertical leg is in all cases given first, i. e. for Truss Type 201 the top chord angles have the 2½" leg vertical.

Total Safe Uniform Load Table

The following table gives the TOTAL safe UNIFORMLY distributed load carrying capacities of Truscon Clerespan Trusses. The weight of DEAD loads must in all cases be deducted to determine the LIVE load carrying capacities. CARRYING CAPACITIES MUST BE REDUCED FOR CONCENTRATED LOADS.

Clerespan Truss Type	SPAN IN FEET												
	28-0	29-0	30-0	31-0	32-0	33-0	34-0	35-0	36-0	37-0	38-0	39-0	40-0
201	10010	9830	9550	9270	9010	8760	8530	8300	8090	7890	7690	7510	7330
202	13070	12800	12420	12060	11720	11400	11100	10800	10530	10270	10020	9780	9550
203	16490	15980	15490	15030	14600	14190	13800	13430	13080	12750	12430	12130	11840
204	17840	17290	16770	16280	15820	15380	14960	14560	14190	13830	13490	13160	12850
205	19910	19290	18710	18150	17640	17150	16680	16230	15810	15410	15030	14670	14320
206	22070	21370	20730	20120	19540	18990	18480	17990	17520	17070	16650	16250	15860
207	26090	25270	24510	23790	23100	22460	21840	21260	20710	20180	19680	19210	18750
208	27590	27220	26800	26010	25250	24540	23870	23220	22610	22030	21490	20960	20460
	36-0	37-0	38-0	39-0	40-0	41-0	42-0	43-0	44-0	45-0	46-0	47-0	48-0
241	9370	9230	9100	8910	8710	8520	8330	8160	7990	7830	7670	7520	7370
242	12220	12040	11860	11590	11330	11090	10850	10620	10400	10190	9990	9790	9610
243	15560	15180	14820	14470	14140	13830	13520	13230	12950	12690	12430	12180	11940
244	16910	16510	16120	15750	15390	15050	14720	14410	14110	13820	13540	13270	13020
245	18840	18390	17950	17540	17140	16760	16390	16040	15700	15380	15070	14770	14480
246	20740	20360	19870	19420	18980	18560	18150	17750	17380	17020	16680	16340	16030
247	24660	24080	23510	22960	22440	21930	21460	21000	20550	20130	19720	19330	18950
248	27030	26370	25730	25130	24550	24000	23460	22950	22470	22000	21550	21120	20700
	44-0	45-0	46-0	47-0	48-0	49-0	50-0	51-0	52-0	53-0	54-0	55-0	56-0
282	11590	11460	11320	11190	11050	10850	10660	10480	10290	10120	9950	9790	9630
283	14940	14640	14360	14080	13810	13560	13310	13070	12840	12620	12400	12200	11990
284	16280	15970	15660	15370	15080	14800	14540	14280	14030	13790	13550	13330	13110
285	18100	17780	17430	17100	16790	16470	16170	15880	15610	15340	15080	14820	14580
286	19730	19490	19250	18920	18570	18220	17890	17570	17260	16960	16670	16390	16120
287	23470	23180	22890	22600	22310	21550	21160	20780	20410	20060	19710	19380	19060
288	26020	25490	24990	24510	24040	23590	23160	22740	22330	21940	21560	21200	20840

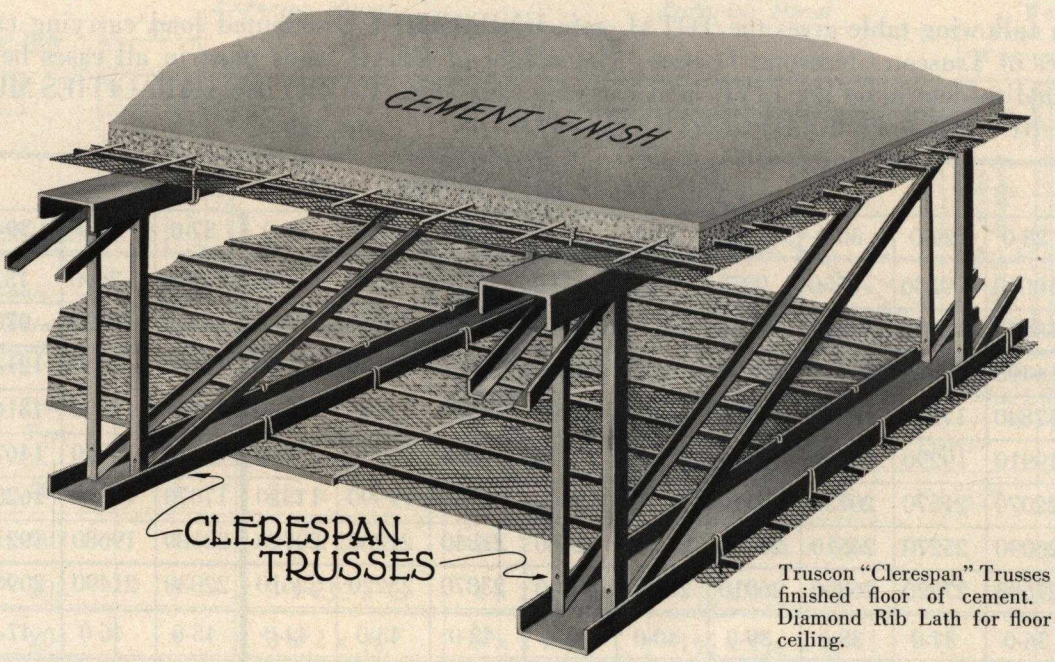
When holes are required in top chord as required by detail on page 10, the following carrying capacities must be reduced in proportion to the reduction of top chord areas.

CLERESPAN TRUSSES FOR FLOORS should not exceed the following spans:—

20″ in depth should not exceed 36′-0″ span
24″ in depth should not exceed 44′-0″ span
28″ in depth should not exceed 51′-0″ span

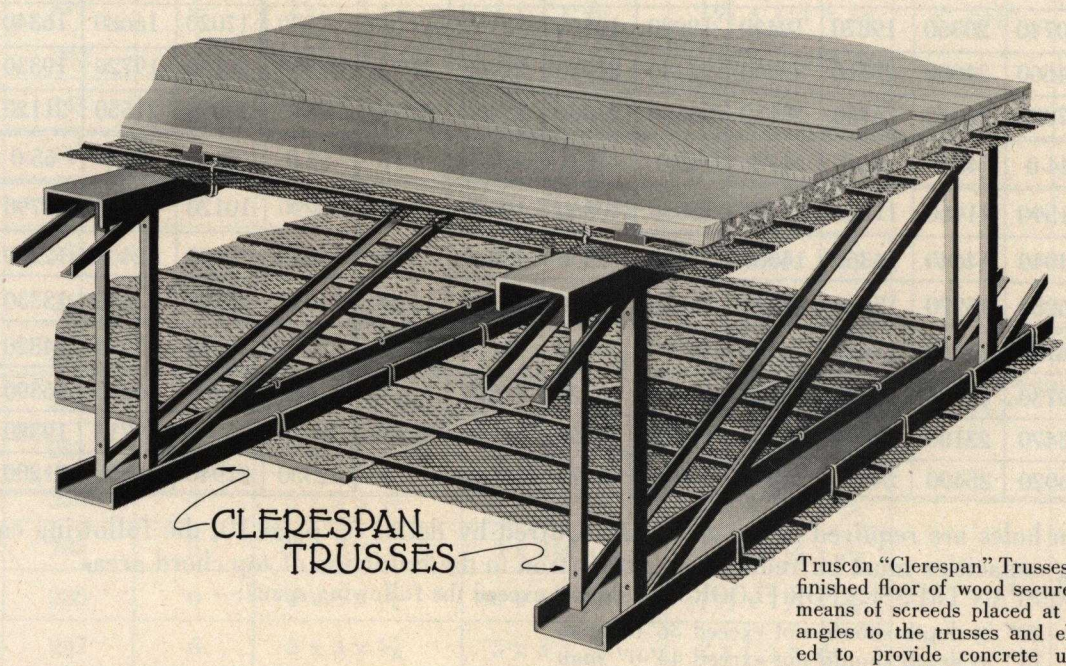
CLERESPAN TRUSSES FOR ROOFS may be used up to the maximum span listed for each depth.

Construction Details



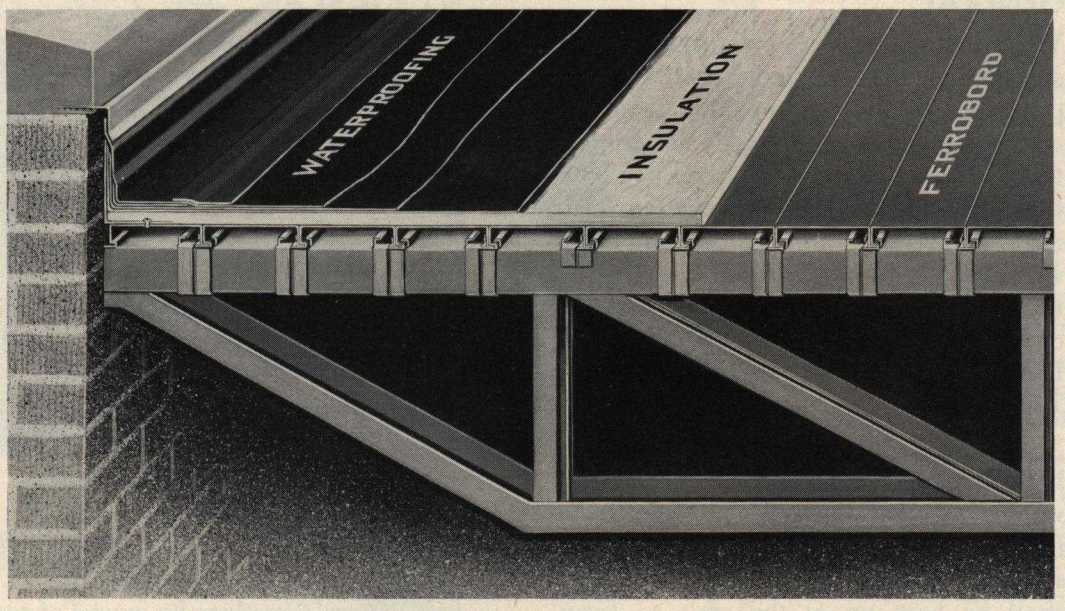
Truscon "Clerespan" Trusses with finished floor of cement. 3/8" Diamond Rib Lath for floor and ceiling.

In "Clerespan" Truss construction the finished floor can be wood, cement or composition, as desired. When wood finish is desired, nailing screeds must be embedded in the concrete slab and placed at right angles to the trusses. Screed clips are provided to hold the screeds securely and also to elevate them, thus permitting the concrete to flow under the screeds.



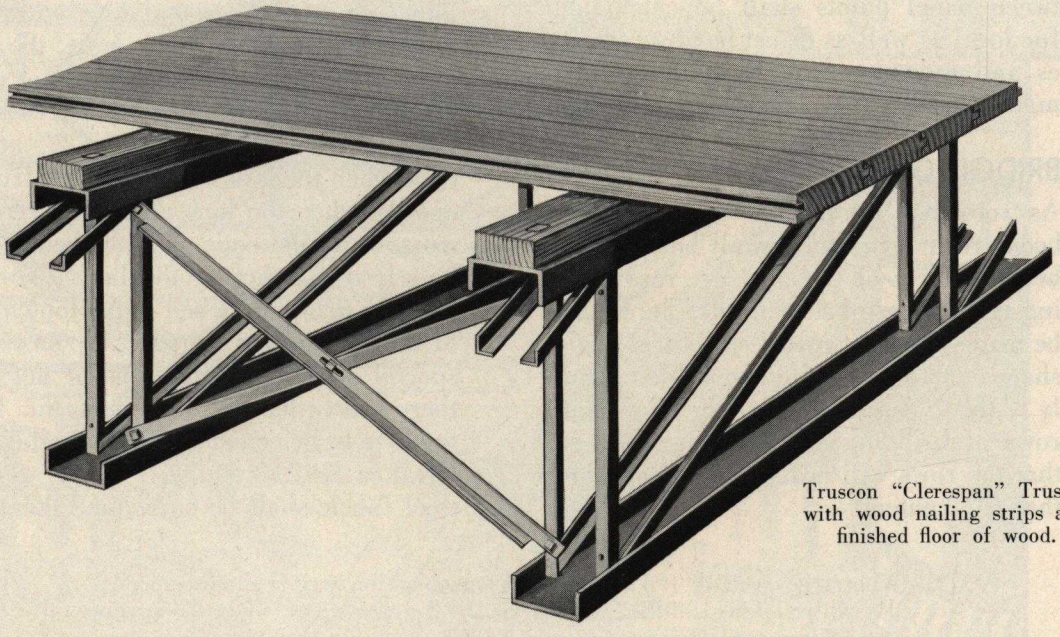
Truscon "Clerespan" Trusses with finished floor of wood secured by means of screeds placed at right angles to the trusses and elevated to provide concrete underneath. 3/8" Diamond Rib Lath for floor and ceiling.

Construction Details



Truscon "Clerespan" Trusses with
Ferrobord Steeldeck Roof.

Truscon "Clerespan" Trusses with Truscon Ferrobord steel roofdeck combined to form the ideal light weight roof construction for long spans, illustrated above. When required, "Clerespan" Trusses can be furnished with holes punched in the top chords for the bolting of wood nailing strips. Wood floors or decks can then be securely nailed, as illustrated below.



Truscon "Clerespan" Trusses
with wood nailing strips and
finished floor of wood.

Specifications

GENERAL

1 Where "Clerespan" floor construction is specified, it shall be understood to mean trusses of the size and spacing as shown on the drawings or properly to support the dead load plus the specified live load together with a structural concrete slab over the trusses and unless otherwise specified, a plaster ceiling directly beneath the trusses. Both floor slab and ceiling shall be supported by metal lath firmly attached to the "Clerespan" Trusses.

2 "Clerespan" Trusses shall be made of hot-rolled structural angles electrically welded together in such a manner as to form a Pratt Type Truss. The top chord shall be straight and the bottom chord shall be bent up at the ends to form bearings.

DESIGN

3 "Clerespan" Trusses shall be designed in accordance with the A. I. S. C. permissible stresses with a maximum of 15,000 lbs stress per sq. in. in all compressive members. The top chords between panel points shall be calculated for local as well as direct bending stresses and reductions in allowable stresses made accordingly.

BRIDGING

4 As soon as "Clerespan" Trusses have been erected, bridging shall be installed between them of the strut or cross bracing type. These bridging members must be made from hot rolled structural angle shapes and either bolted or welded rigidly to the "Clerespan" Trusses. Sufficient rows of bridging shall be furnished so that the rows will not be placed at more than 10′ centers.

FLOOR SLAB

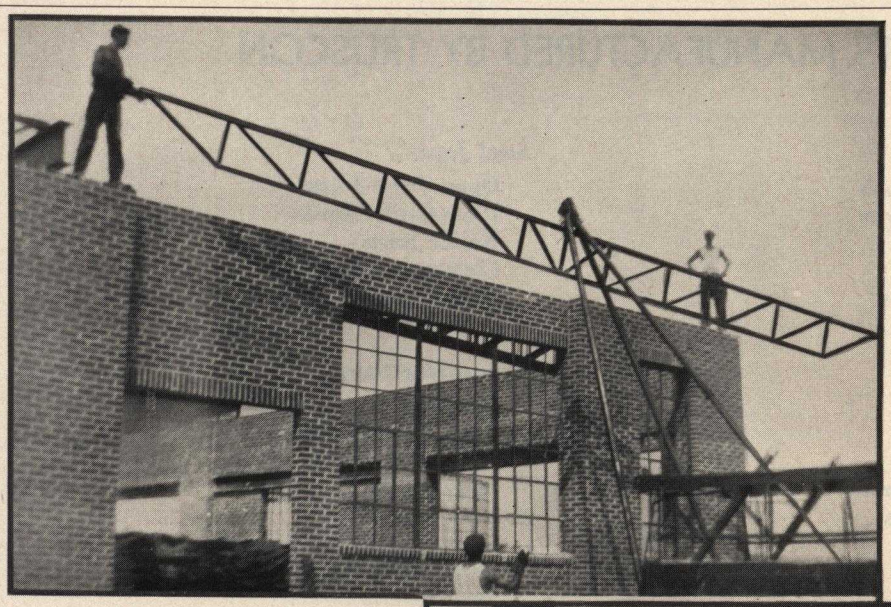
5 When the floor finish is cement, tile, or similar materials, a structural slab shall be continuous and not less than 2½″ in thickness of 1: 2: 4 stone concrete. This concrete shall be known as a dry mix and if buggies or barrows are used for its disposition, planks shall be placed across the top of the "Clerespan" Trusses for runways and the concrete shall not be dumped between the trusses but shall be dumped over the top of them so as to prevent unnecessary sagging of the lath.

6 Where wood floor finish is specified 2″ x 3″ beveled wood screeds spaced 16″ apart shall be placed above and at right angles to the "Clerespan" Trusses. These shall be elevated 1″ above the trusses and held securely in place by means of screed clips which in turn shall be rigidly attached to the "Clerespan" Trusses. The space between and beneath the screeds shall be filled with concrete.

SLAB REINFORCEMENT

7 The top concrete slab shall be reinforced and supported by metal lath with ⅜″ ribs not more than 4.8″ apart, the lath to be placed with the ribs up and at right angles to the "Clerespan" Trusses.* Lath sheets shall lap at least 2″ at the ends when the laps occur over the trusses and 4″ when the laps occur between the trusses and the ends of both sheets shall be wired together at the lap. The lath shall be firmly attached to the top chords of the "Clerespan" Trusses by means of special wire lath clips spaced not further apart than 12″. When the floor finish is to be cement, tile or similar material, a No. 10 gauge 6″ x 6″ welded steel fabric shall be embedded therein.

NOTE—Where the asterisk (*) is shown, a specification writer should specify ¾″ Hy-rib weighing .58 lbs., .68 lbs. or .78 lbs. per sq. ft. when the spacing of the "Clerespan" Trusses exceeds 2′-0″.



Clerespan Trusses are practical even for small and medium sized, one-story buildings. Their use reduces the number of columns, thus increasing the efficiency of the building design. The extreme simplicity of installation lowers costs. The Trusses are completely shop-fabricated and reach the job ready for installation. Their light weight makes them easy to handle and they are easily raised and placed in position. Their great strength permits both longer spans and wider spacing between trusses.

The illustrations bring out the ease of handling and the simplicity of installing Clerespan Roof Trusses.

Repps Orchards Products Company
Glassboro, N. J.

~

Louis Goettlemen, Architect

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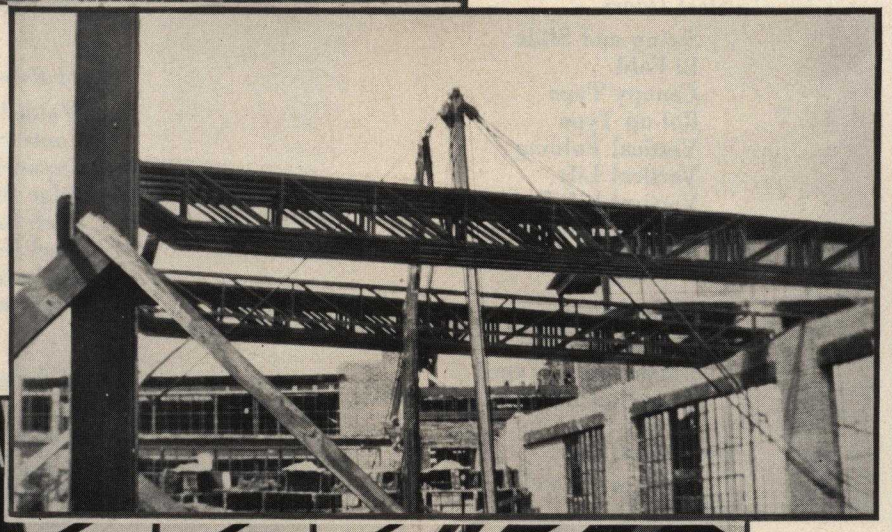
Industrial Constructors Company, Contractors



PRODUCTS MANUFACTURED BY TRUSCON

Steel Window Products

Double-Hung Windows
Donovan Awning Type
Pivoted Windows
Utility Windows
Continuous Windows
Detention Windows
Projected Windows
Steel Casements
Casement Screens
Basement Windows
Steel Frames
Mechanical Operators
Pressed Steel Lintels
Coal Chutes

Steel Doors

Swing and Slide
Bi-Fold
Canopy Type
Rol-up Type
Vertical Folding
Vertical Lift
Vertical Lift-Swing
Fire Department
Airplane Hangar

Steel Buildings

Flat Roof Types
Pitched Roof Types
Ferroclad Insulation for Walls

Structural Steel

Structural Steel
Trusses
Teegrid Bridge Floors
Channelplate Floor System
Paving Blocks for Floors
Presto Floors

Steeldeck Roofs

Ferrodeck
I-Plates
Ferrobord

Metal Lath Products

A-Metal Laths and Hy-Ribs
Herringbone Doublemesh
Diamond Laths
Self-Sentering and Trussit
Stucco Steel and Strip-ite
Insulmesh
Corner Beads and Cornerite
Channels and Studs
Mortar Boxes
Metal Trim

Steel Joists

Open Truss Joists
Plate Girder Joists
Nailer Joists
Clerespan Trusses
Accessories

Reinforcing Steel

Rib Bars
Kahn Trussed Bars
Column Hooping
Steel Forms
Floretyles
Locktyle
Bank Vault Reinforcing
Steel Inserts

Road Reinforcing

Welded Steel Fabric
Contraction Plates
Expansion Joints
Edge Protectors
Curb Bars
Steel Road Forms
Highway Guards
Highway Crossings

Steel Poles

Distribution Poles
Telephone Poles
H-Frames
Floodlight Towers
Pipe Line Supports
Electrification Structures

Pressed and Drawn Steel

Automobile and Truck
Frames and Parts
Heavy Sections Pressed Steel
Steel Liner Plates
Forms for Concrete Construction
Cable Reels
Safety Tread Steel
Skid Platforms
Factory Trucks
Foundry Flasks

Laboratory Products

Waterproofings
Technical Paints
Floor Hardeners
Cement Roofing Tile

No. 657-11-31

Truscon Engineering and Sales Offices

Albany, N. Y., 75 State Street
Atlanta, Georgia, 610 Rhodes-Haverty Bldg.
Baltimore, Md., 1507 Standard Oil Building
Birmingham, Ala., 1105 Martin Building
Boston, Mass., 38 Chauncy Street
Buffalo, N. Y., 204 Sidway Building
Charleston, W. Va., 720 Kanawha Valley Bldg.
Chattanooga, Tenn., 1222 James Building
Chicago, Ill., 201 North Wells Street
Cincinnati, Ohio, 1026-28 Dixie Terminal Building
Cleveland, Ohio, 1304 Builders Exchange Bldg.
Columbus, Ohio, 1000-04 Atlas Building
Dallas, Texas, 413 Construction Building
Dayton, Ohio, 925 Meredith Street
Denver, Colorado, 425 Cooper Building
Des Moines, Iowa, Hubbell Building
Detroit, Michigan, 615 Wayne Street
Erie, Pa., 1207 French Street
Fort Wayne, Ind., 424 Cal-Wayne Building
Greensboro, N. C., 830 Jefferson Std. Life Bldg.
Harrisburg, Pa., 600-02 North Second Street
Houston, Texas, 1406 Esperson Building
Indianapolis, Ind., 812 Union Title Building
Jacksonville, Fla., 324 Hildebrandt Building
Kansas City, Mo., 101 West 11th Street
Los Angeles, Calif., 5480 East Slauson Avenue
Louisville, Ky., 419 W. Jefferson Street
Lubbock, Texas, P. O. Box 2047
Madison, Wis., 408 West Gorham Street
Memphis, Tenn., 263-269 Walnut Street
Milwaukee, Wis., 1200 Straus Building
Minneapolis, Minn., 354 Baker Building
Mount Vernon, N. Y., 9 West Prospect Ave.
Newark, N. J., 605 Broad Street
New Haven, Conn., 42 Church Street
New Orleans, La., 448 Canal Bank Building
New York City, N. Y., 155 E. 44th Street
Norfolk, Va., 22nd and Manteo Streets
Oklahoma City, Okla., 317-319 Magnolia Bldg.
Omaha, Neb., 901 World-Herald Building
Philadelphia, Pa., 1505 Race Street
Phoenix, Arizona, 222 Luhrs Building
Pittsburgh, Pa., 523-26 Grant Building
Portland, Oregon, 449-57 Kerby Street
Richmond, Va., 724 Central National Bank Bldg.
Rochester, N. Y., 614 Temple Building
Roswell, New Mexico, County Engineer's Office
St. Louis, Mo., 1304 Ambassador Building
Salt Lake City, Utah, 1526 S. West Temple St.
San Antonio, Texas, 905 Travis Building
San Francisco, Calif., 74 New Montgomery St.
Scranton, Pa., 1717 Mulberry Street
Seattle, Wash., 519 Lloyd Building
Syracuse, N. Y., 540 Gurney Building
Tampa, Fla., P. O. Box 1512
Toledo, Ohio, 312 Richardson Building
Washington, D. C., 305 Hill Building

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PRESSED STEEL DIVISION, Offices and Plant, CLEVELAND, OHIO

FOREIGN TRADE DIVISION, 155 E. 44th Street, NEW YORK CITY

TRUSCON STEEL COMPANY OF CANADA, Limited, WALKERVILLE, ONT.

THE TRUSCON LABORATORIES, Offices and Plant, DETROIT, MICHIGAN

For Waterproofings, Floor Hardeners, Industrial Maintenance Products and Cement Roofing Tile

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YOUNGSTOWN, OHIO

EXECUTIVE OFFICES AND MAIN PLANT: YOUNGSTOWN, OHIO

FACTORIES: CLEVELAND, DETROIT, LOS ANGELES, CANADA AND JAPAN

No. 657-11-31